JP42
Pump Repair Manual

JP42 Piston Pump

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Introduction

The information in this manual is for the repair and maintenance of the JP42 ceramic piston pump found on the Jacto Arbus 200 airblast sprayer. The most common problem you will find with this pump is the piston gasket seals leaking usually caused by the operator not properly lubricating the pistons every 4 hours or not adjusting the gasket adjuster. The manual will also discuss the replacement procedure for the bearings, shaft and other components.

Tools necessary:

1. ¾” wrench
2. 10mm wrench and socket
3. 13mm wrench and socket
4. Snap ring pliers
5. Flat blade screw driver
6. Bearing puller
7. Rubber Hammer
8. Inch pound and foot pound torque wrenches

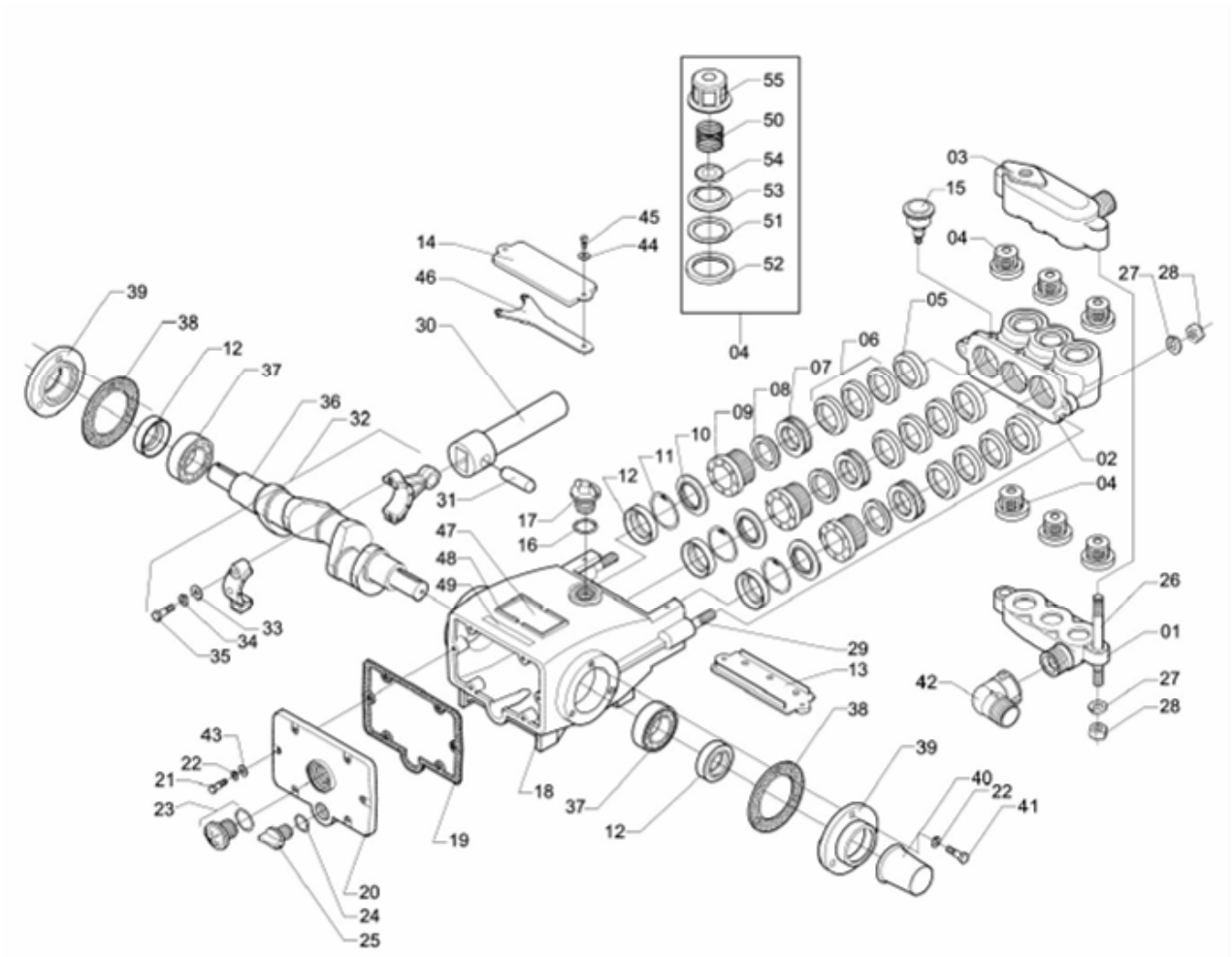
Specifications

- Working Rotation……800rpm
- Working Pressure……...500 psi
- Power Consumption……..……1.9 HP
- Flow Rate……....11 GPM
- Piston Quantity……...3
- Weight w/o oil…….……..……...48 lbs
- Rotation…….....Clockwise or Counterclockwise

Piston Gasket Adjustment

- Before rebuilding the JP42 piston pump remove the grease caps by unthreading them in a counterclockwise rotation and check and add grease if necessary. Reinstall the grease caps and once you feel resistance from the grease turn them one to two more full turns. This forces grease into the piston gasket area. Remove the gasket adjusting tool from behind the upper dust cover on top of the pump. Using the gasket tool, turn the gasket adjusters an 1/8th of a turn at a time, until the leak stops. If the leak continues then the pump will need to be rebuilt.

Parts Breakdown



Part Description

#	Description	#	Description
1	Suction Cover	28	Nut ½" UNC
2	Pump Head	29	Stud Bolt ½" – 13 UNC X 62mm
3	Pump Cover	30	Piston Assembly
4	Pump Valve	31	Connecting Rod Shaft
4A	Valve Packing	32	Connecting Rod Assembly
5	Seat Ring	33	Flat Washer 5.3 X 10.0 X 1.0mm
6	Gasket 30 X 39	34	Lock Washer M8
7	Compression Ring	35	Hex Bolt M8 X 35mm
8	Scraper Ring	36	Crankshaft
9	Gasket Adjuster	37	Fixed Bearing
10	Deflector Ring	38	Packing 620 X 920 X 4
11	Snap Ring (42)	39	Flange
12	Retainer	40	Crankshaft Protector
13	Lower Dust Guard	41	Hex Bolt M6 X 16 X 1.00
14	Upper Dust Guard	42	Male/Female Elbow 1" BSP 90°
15	Grease Nipple	43	Flat Washer 64 X 125 X 16
16	O-ring ORI-119	44	Flat Washer 41 X 127 X 12.1
17	Plug ¾ BSP	45	Bolt M4 X 12
18	Pump Body	46	Gasket Adjusting Tool
19	Packing 104 X 160 X 1.59	47	Identification Plate
20	Cover	48	Round Head Rivet
21	Bolt M6 X 1 X 20	49	Sticker "Keep oil on level"
22	Lock Washer M6	50	Compression Spring
23	Oil Sight ½" BSP with Seal	51	Guide Ring – Pump Valve
24	O-ring OR1-112	52	Valve Packing
25	Drain Plug ¼" BSP	53	Valve Seat
26	Stud Bolt ½" UNC X 138mm	54	Disc 23mm
27	Lock Washer ½"	55	Valve Cage

Disassembly

- Using a flat bladed screwdriver remove the upper dust cover.

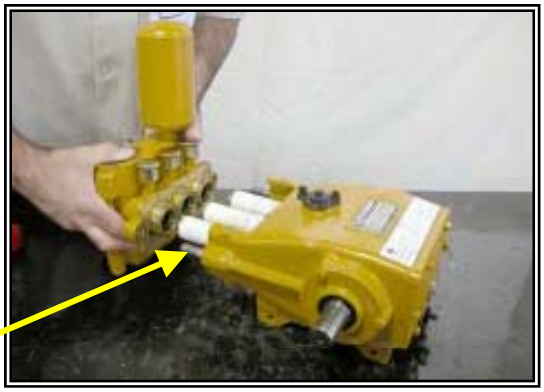
- Behind the dust cover you will find the gasket adjusting tool.

- Remove the gasket adjusting tool.

Disassembly

- Using the gasket adjusting tool, loosen all 3 gasket adjuster as shown.

- Using a ¾” wrench remove the 2 bolts that attach the cylinder head to the pump body and remove the cylinder head/valve cover assembly.



- Using the gasket adjuster tool loosen the gasket adjusters until they can be removed by hand.

Disassembly

- Remove the 3 gasket adjusters with scraper ring.

- Remove the scraper rings from the 3 gasket adjusters.

- Remove all the compression rings, their gaskets and seat ring. **Note: Each compression ring has 3 gaskets.**

Disassembly

- Remove the 3 grease caps from the cylinder head by turning them counterclockwise.

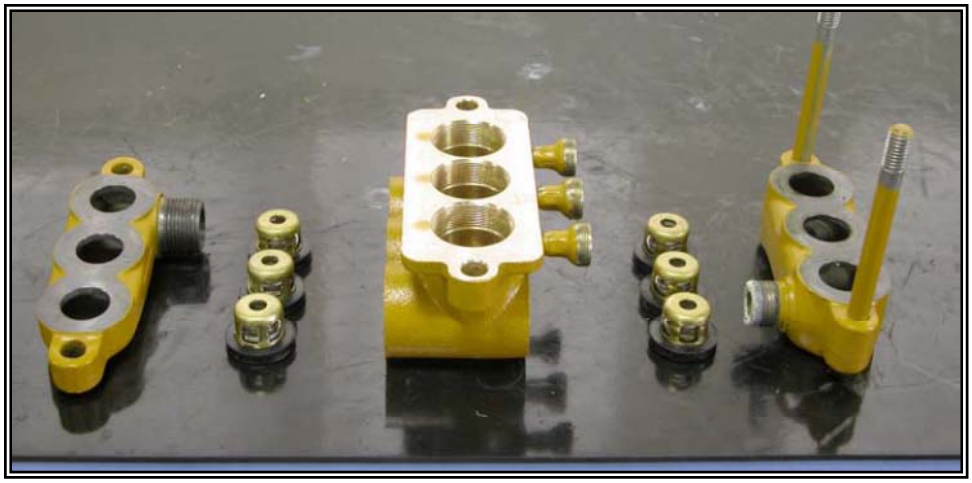
- Using a ¾” wrench remove the nuts that hold the valve covers to the cylinder head.

- Separate both valve covers from the cylinder head as shown.

Disassembly

- Remove the 3 valves from the outlet valve cover.

- Remove the 3 intake valves from the cylinder head as shown.



Disassembly

- Drain the oil from the crankcase by removing the drain plug on the oil pan.
- Using a 10mm wrench remove the bolts for the oil pan as shown.

- Remove the oil pan and gasket from the pump body.

- Remove the plastic crankshaft cover.

Disassembly

- Remove the connecting rod caps using a 13mm socket and ratchet.
- **Note: If the connecting rods and caps are to be reused then make sure they are assembled the same way they came out.**

- **Note: Make sure the connecting rods and caps are marked as pairs as the connecting rods and caps are machine matched. Use a punch or permanent marker to mark the caps and rods as sets. Note the position where the pistons were removed from as they need to be installed back in the same position.**

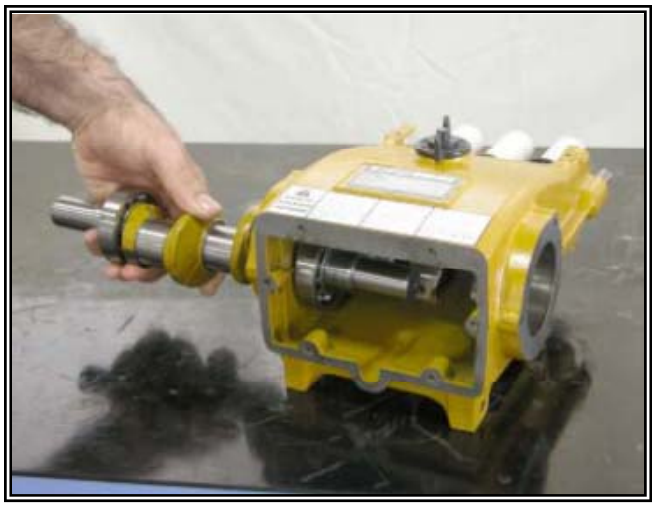
Disassembly

- Using a 10mm wrench remove the bolts for both crankshaft bearing flanges.

- Remove both crankshaft bearing flanges and gaskets.

- Remove both the crankshaft oil seals from the crankshaft bearing flanges.

Disassembly



- Push the connecting rods up away from the crankshaft journals. Next slide the crankshaft assembly out of the pump body as shown. Using a hydraulic press or bearing puller, replace the crankshaft bearings if necessary.

- Remove the piston/connecting rod assembly from the pump body by sliding it out the bottom as shown.

- Remove the connecting rod wrist pin.

Disassembly

- Using snap rings pliers remove the snap ring from the piston guide holes.

- Remove the piston oil seal from the piston guide holes as shown.

Disassembly

- Remove the oil fill/vent cap from the pump housing by unscrewing it.

- Remove the o-ring for the fill/vent cap and replace with new one.

- Remove the top portion of the fill/vent cap as shown by prying up gently.

- Check and clean the fill/vent cap vent ports inside the cap. Reassemble the fill/vent cap and reinstall back on the pump body.

Disassembly

- Remove the oil drain plug from the bottom of the oil pan.

- Remove and replace the oil drain plug o-ring.

- Reinstall the oil drain plug.

Clean and check all components for wear or damage and replace if necessary.

Assembly

- Install the new oil seal into the piston guide hole.

- Using snap ring pliers, install the snap ring into the piston guide hole groove as shown.

Assembly

- Apply assembly lube onto the wrist pin and connecting rod hole and assemble the connecting rod to the piston with the wrist pin,

- Insert the connecting rod/piston assembly into the proper piston guide hole. **Note: Make sure the piston is going back into the same hole it came out of if reusing.**

- Push the pistons all the way up into the piston guide holes. Next insert the crankshaft into the pump body as shown.

Assembly

- Install a new crankshaft oil seals into the crankshaft bearing flanges.

- Using a new gasket, install the crankshaft bearing flange onto the pump body.

- Install the crankshaft flange bolts and using a inch pound torque wrench and 10mm socket, tighten to 45 in/lbs.

Assembly

- Apply assembly lube on both the rod caps and crankshaft journals. Install the connecting rod caps onto the matching connecting rod in the proper order they were originally removed.

- Using a inch pound torque wrench and a 13mm socket, tighten to 160 in/lbs.

- Install the crankshaft plastic protector as shown.

Assembly

- Using a new gasket, install the oil pan onto the pump body.

- Using an inch pound torque wrench and a 10mm socket tighten the oil pan bolts to 45 in/lbs.

Assembly

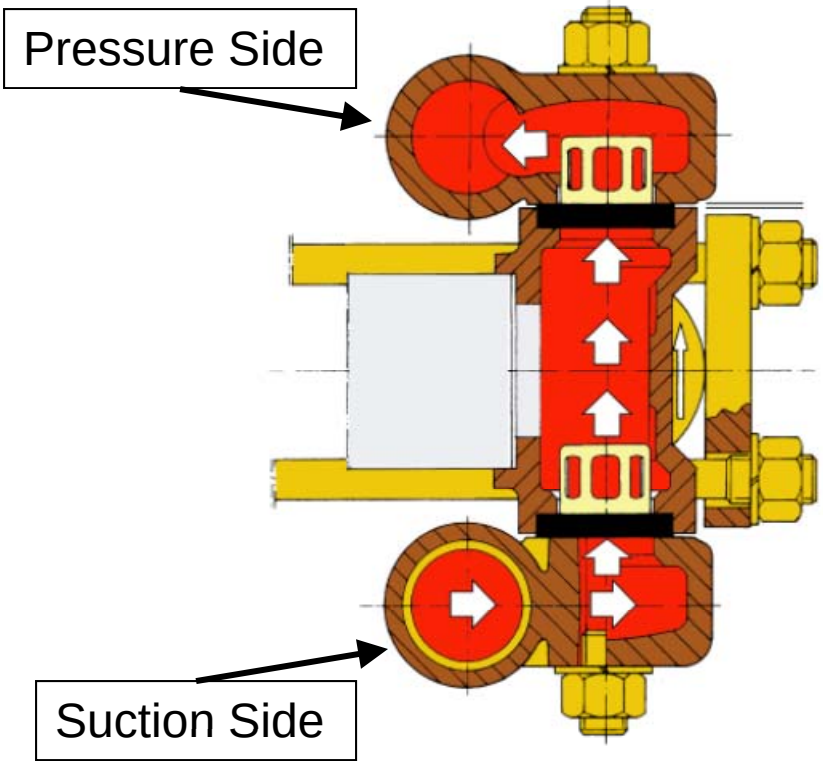
- Insert 3 valves into the cylinder head on the ports opposite to the grease reservoirs. **Note: These are the intake valves.**

- Insert 3 valves into the valve cover that attaches to the other side of the cylinder head as shown. **Note: The valves should be positioned to face in the same direction (see next page for illustration)**

- Assemble the valve covers onto the cylinder head as shown. **Note the position of the outlet port pointing away from the pump body.**

Assembly

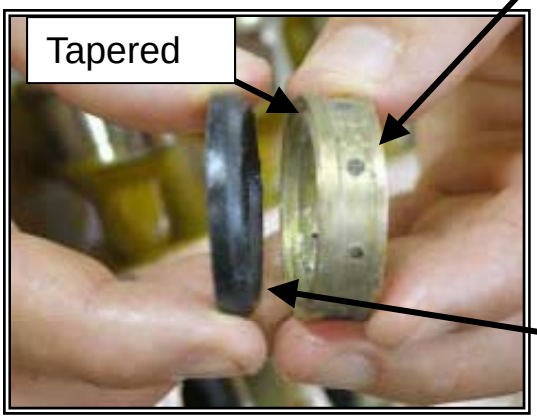
- Install the 2 nuts onto the valve cover studs and using a torque wrench and ¾” socket, tighten to 33 ft/lbs.



Note: Diagram above is from a JP50 or 75 pump and for illustration purposes.

Assembly

- Apply a coating of grease and assemble the seals for the piston in the following order: Seat ring, 3 piston gaskets and compression ring for each of the 3 piston holes in the cylinder head.



- **Note the shape of the piston gaskets and compression ring. The tampered end of the piston gasket goes towards the taper on the compression ring as shown.**

- Next, apply a coating of grease and install the scraper ring onto the gasket adjuster with the beveled edge pointing towards the compression ring and gaskets.

Assembly

- Thread the gasket adjuster with scraper ring attached onto the cylinder head as shown.

- Using the gasket adjuster tool thread the gasket adjuster on very loosely. **Note: If you tighten the gasket adjusted too much at this point it maybe difficult to install the cylinder head onto the pistons in the next step.**

Assembly

- Install the cylinder assembly onto the pump body and pistons as shown. Install the nuts that hold the cylinder head to the pump body and tighten using a torque wrench and ¾" socket to 33 ft/lbs.

- Using the gasket adjuster tool slightly tighten the gasket adjuster. **Note: Once the pump is reinstalled onto the sprayer it may be necessary to readjust the gasket adjuster, if a leak occurs, by turning the gasket adjuster an 1/8 of a turn at a time clockwise until the leak stops.**

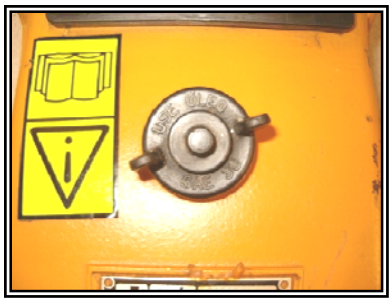
Assembly

- Put the gasket adjuster tool in its storage area under the upper dust cover as shown.

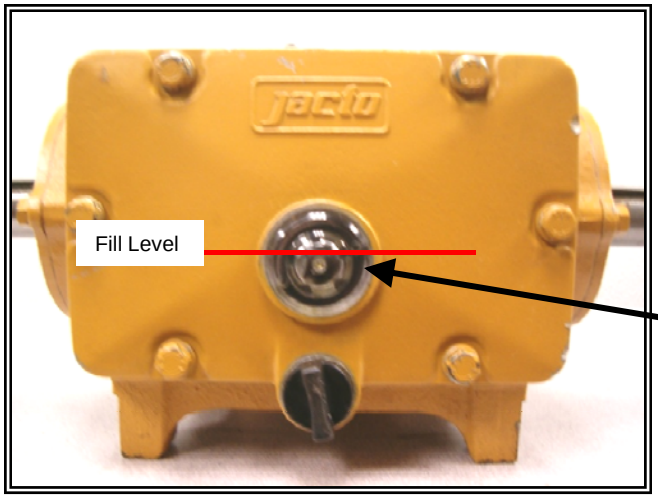
- Install the upper dust cover onto the pump body.

- Install the 2 screws for the upper dust cover and tighten using a flat bladed screwdriver.

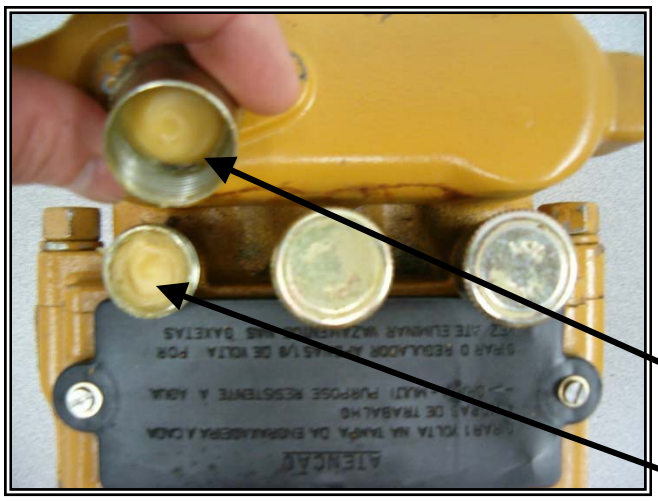
Assembly



- Remove the fill/vent cap on top of the pump body.



- Add approximately 1 quart of SAE 30W oil or until the oil is seen in the middle of the oil level site glass located on the oil pan. Reinstall the fill cap.



- Remove the grease caps and fill the reservoir cap ½ full with a lithium based grease. Reinstall the caps and lightly tighten until resistance from the grease if felt then turn an additional 1 to 2 turns.